CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
January 7, 2015

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vacuum truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for January 7, 2015 07:00 to January 8, 2015 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted for hydrogen sulfide (H_2S), percent of the Lower Explosive Limit (LEL), oxygen (O_2), particulate matter (10 micron particles, PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOCs), with instruments such as the RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, fixed community real-time air monitoring locations, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems© AreaRAE units with a ProRAE Guardian system at four locations on the fence line of the facility within the work area. Unit 11 was deployed along the fence line of the facility between the 120 barrel tank truck and Mission Rock Road (primarily to monitor Cl2 concentrations near the tank truck). AreaRAEs were equipped with sensors to detect Cl_2, VOCs, LEL, H_2S, and SO_2. Unit 01 recorded percent LEL up to 3% during this period, however CTEH® personnel in the area did not detect any percent LEL with handheld instruments. The LEL sensor was bump-tested with calibration gas, then a full calibration performed after determining the sensor experienced electronic sensor drift. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

Particulate monitors were collocated with AreaRAE units 01, 02, 03, and 04 and data-logged to monitor PM_{10}. Table 3 summarizes data-logged particulate monitoring data.

Table 1: Manually-Logged Real-Time Air Monitoring Summary[1]
January 6, 2015 07:00 – January 7, 2015 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Detection Range[2]
Work Area	H_2S	MR+ / MR Pro	8	0	NA	< 1 ppm
	LEL	MR+ / MR Pro	8	0	NA	< 1 %
	O_2	MR+ / MR Pro	5	5	20.9	20.9 - 20.9 %
	PM_{10}	AM510/Dusttrak	3	3	0.014	0.009 - 0.018 mg/m^3
	SO_2	MR+ / MR Pro	7	0	NA	< 0.1 ppm
	VOC	MR+ / MR Pro	8	0	NA	< 0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 2: AreaRAE Air Monitoring Summary[1]
January 7, 2015 07:00 – January 8, 2015 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range[2]
Unit 01	H_2S	5171	113	0.1 ppm	0.1 - 0.2 ppm
	LEL	5171	15	0.03	3.0 - 3.0 %
	SO_2	5171	35	0.1 ppm	0.1 - 0.1 ppm
	VOC	5171	0	NA	< 0.1 ppm
Unit 02	H_2S	5197	0	NA	< 1 ppm
	LEL	5197	0	NA	< 1 %
	SO_2	5197	0	NA	< 0.1 ppm
	VOC	5197	184	0.1 ppm	0.1 - 0.4 ppm
Unit 03	H_2S	5221	0	NA	< 1 ppm
	LEL	5221	0	NA	< 1 %
	SO_2	5221	0	NA	< 0.1 ppm
	VOC	5221	42	0.2 ppm	0.1 - 0.5 ppm
Unit 04	H_2S	5104	171	0.1 ppm	0.1 - 0.2 ppm
	LEL	5104	0	NA	< 1 %
	SO_2	5104	0	NA	< 0.1 ppm
	VOC	5104	89	0.1 ppm	0.1 - 0.1 ppm
Unit 11	Cl_2	4884	0	NA	< 0.1 ppm
	SO_2	4884	0	NA	< 0.1 ppm
	VOC	4884	3	0.1 ppm	0.1 - 0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 3: AM510 PM_{10} Monitoring Summary[1]
January 7, 2015 07:00 – January 8, 2015 07:00

Serial No.	Location	No. of Readings	No. of Detections	Avg. Detection	Detection Range
10601072	AR01	280	269	0.009	0.001 - 0.127 mg/m^3
11005015		1245	1245	0.009	0.001 - 0.179 mg/m^3
10503020	AR02	5668	5440	0.011	0.001 - 0.372 mg/m^3
10704075	AR03	5667	5451	0.008	0.001 - 0.344 mg/m^3
10601073	AR04	4991	4984	0.009	0.001 - 0.597 mg/m^3

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*

Appendix A

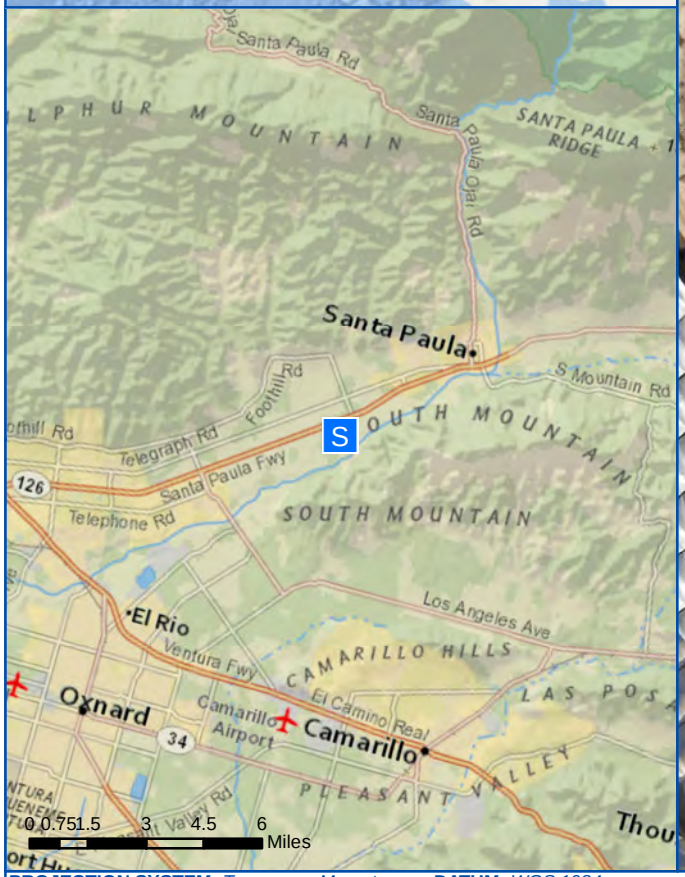
Incident Maps:

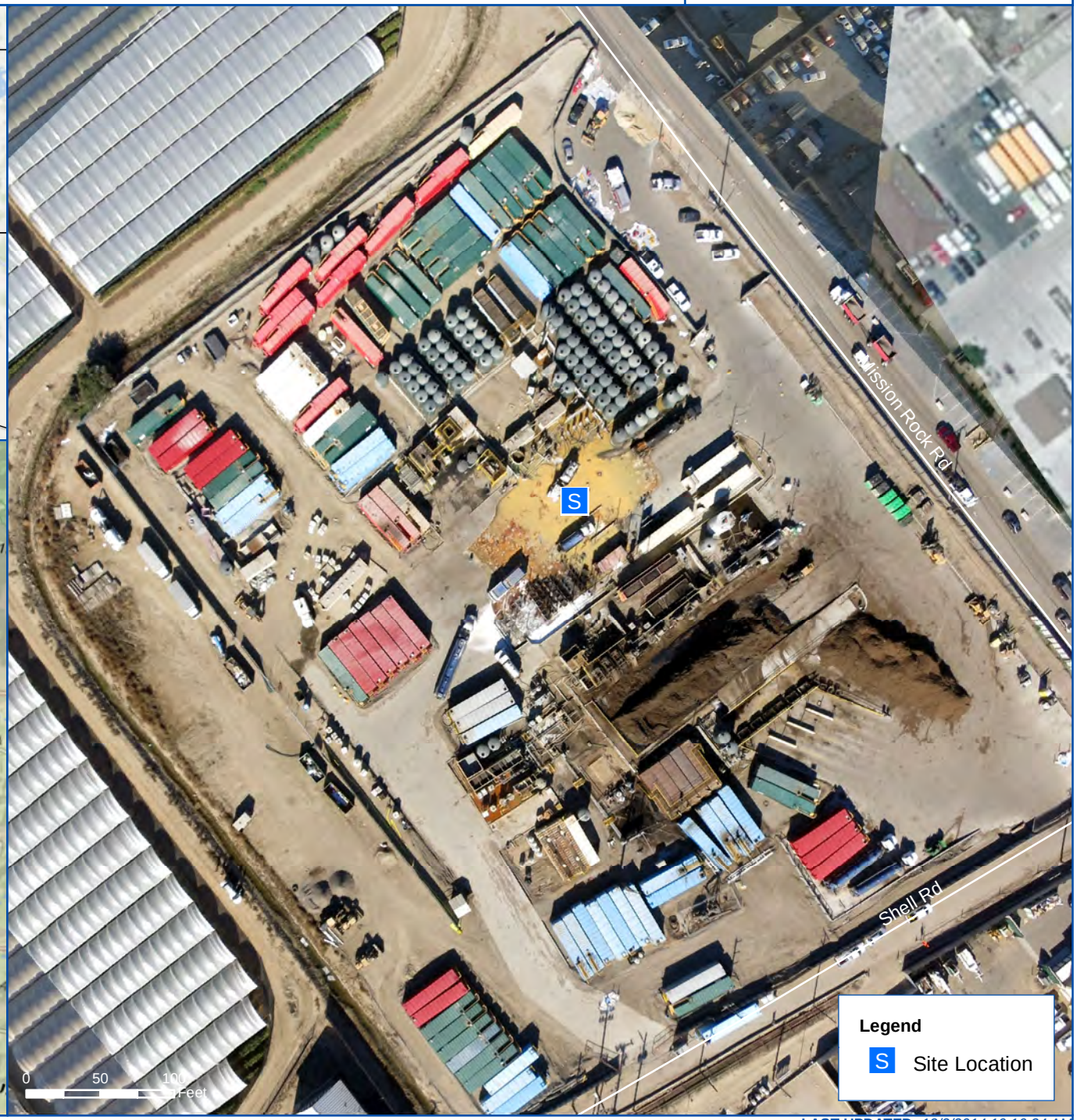
Real-Time Air Monitoring Locations and Incident Site

Site Location

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura





PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/2/2014 10:10:34 AM*

Aerial Overview - 1/07/2015

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/8/2015 7:36:13 AM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2S - Jan 07, 2015 07:00 to Jan 08, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/8/2015 7:26:35 AM*

Manually Logged Real-Time Air Monitoring Concentrations

LEL - Jan 07, 2015 07:00 to Jan 08, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/8/2015 7:27:47 AM*

Manually Logged Real-Time Air Monitoring Concentrations

O_2 - Jan 07, 2015 07:00 to Jan 08, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/8/2015 7:29:54 AM*

Manually Logged Real-Time Air Monitoring Concentrations

PM_{10} - Jan 07, 2015 07:00 to Jan 08, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/8/2015 7:30:57 AM*

Manually Logged Real-Time Air Monitoring Concentrations

SO_2 - Jan 07, 2015 07:00 to Jan 08, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/8/2015 7:32:05 AM*

Manually Logged Real-Time Air Monitoring Concentrations

VOC - Jan 07, 2015 07:00 to Jan 08, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/8/2015 7:32:40 AM*

Appendix B:

AreaRAE Trend Graphs, AM510 Trend Graphs, and Location Map

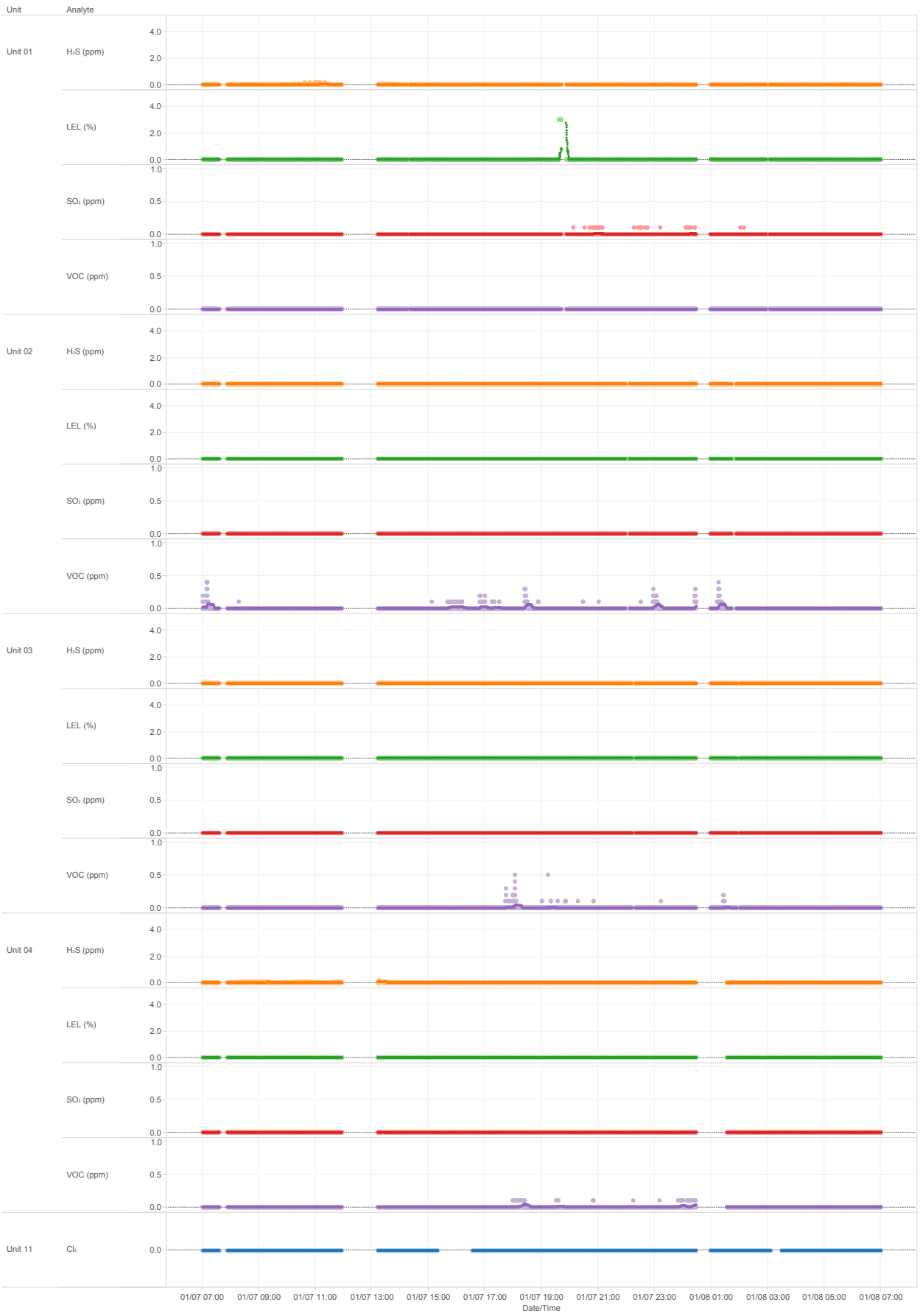
AreaRAE and AM510 Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

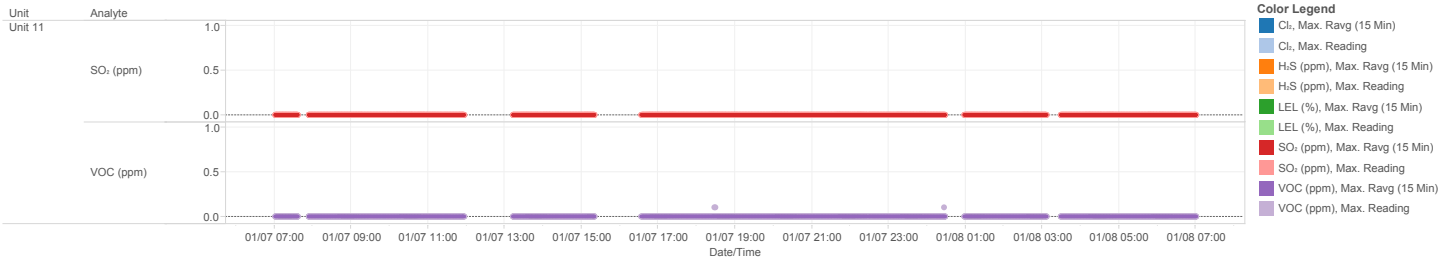
PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/7/2015 11:24:31 AM*

Patriot Environmental
AreaRAE Trend Graphs
1/07/2015 07:00 - 1/08/2015 07:00



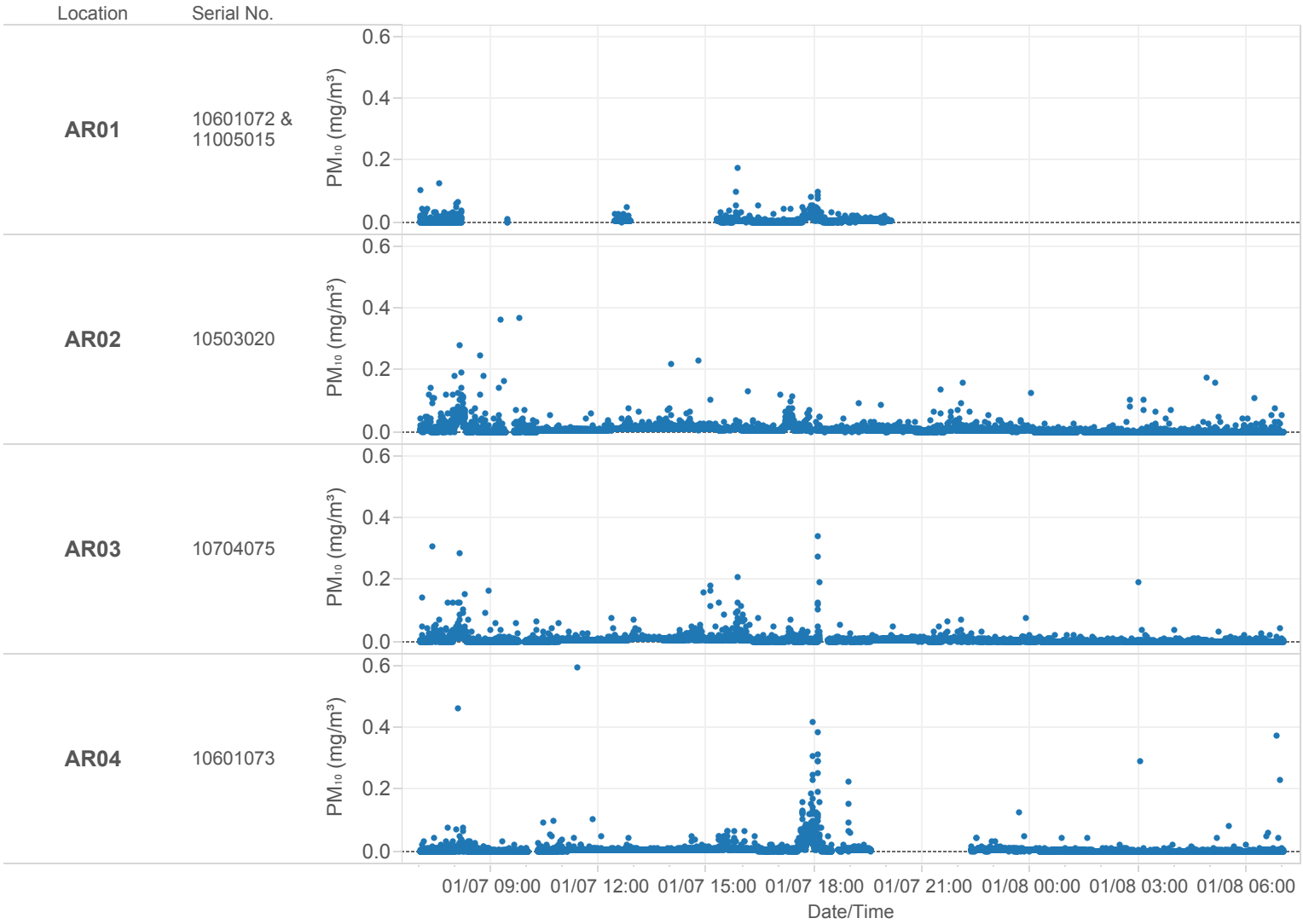
- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
AreaRAE Trend Graphs
1/07/2015 07:00 - 1/08/2015 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
MISSION INCIDENT
Datalogged AM510 (PM_{10}) Summary
1/07/2015 07:00 - 1/08/2015 07:00



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